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To BYOD or not to BYOD: factors affecting academic acceptance of student mobile devices in the classroom

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This article reports on factors affecting local academic acceptance of bring your own devices (BYOD). A review of the literature revealed a paucity of studies that have explored the complex factors that affect academic use and intention to use mobile devices in the classroom, with even less exploring truly ubiquitous and varied personal devices as opposed to supplied institutional or research study sets.

A detailed qualitative investigation with 14 academics was undertaken, drawing upon and aiming to compliment mature acceptance research. Firstly by employing a focus group to identify initial psychological factors and the relevance of acceptance theories to the local context. Then, secondly by using in-depth semi-structured interviews, shaped by acceptance categories, to identify a breadth of psychological factors affecting faculty use and intention to use BYOD.

This small-scale study found clear distinctions in local academic perceptions of BYOD compared with faculty devices and reported a range of factors that appeared to distinctly affect local academic acceptance of BYOD.

Keywords: higher education; bring your own devices; innovation diffusion theory; unified theory of acceptance and use of technology

Introduction

Much has been made of the educational opportunities ubiquitous mobile devices present to academics in higher education (HE). Yet, if personal mobile devices are to be effectively integrated into the autonomous classroom practices of academics, then academics must first accept these innovations.

This small-scale exploratory study sets out to investigate factors affecting acceptance of bring your own devices (BYOD) in one UK HE faculty of education. To help identify the complex multivariate factors shaping academic acceptance, two popular acceptance theories were checked against focus group findings and then drawn upon to shape semi-structured interview questions. These theories were the mature, Innovation Diffusion Theory (IDT) which due to its age and popularity has been well tested, and the contemporary, Unified Theory of Acceptance and Use of Technology (UTAUT) which combines a range of acceptance constructs into one comprehensive model (Rogers 2003; Venkatesh, *et al.* 2003).

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Literature review

Mobile devices for learning

OFCOM (2015) describe the UK as a 'smartphone society' and report that 90% of 16–24 year-olds own a smartphone and that over half of UK households have access to a tablet computer. Internationally in HE, the EDUCAUSE and New Media Consortium (NMC) annual Horizon reports have repeatedly identified mobile devices generally (Johnson *et al*. 2013) and BYOD specifically (Johnson *et al*. 2016), as likely to have a substantial impact on HE institutions in the near term. But, the UK 2014 Universities and Colleges Information Systems Association (UCISA) survey identified mobile technologies as placing the greatest demands on UK learning technology support (Walker *et al*. 2014).

Given this context, it is unsurprising to note that mobile or ubiquitous learning is one of the fastest growing research areas in the field of Information Communication Technology in education (Hwang and Tsai 2011; Pegrum, Oakley, and Faulkner 2013). Indeed, mobile learning researchers have identified a range of advantages including its potential for student-centred pedagogies (Kukulska-Hulme 2013) and improved student engagement and motivation (Backer 2010; Enriquez 2010; Pegrum, Oakley, and Faulkner 2013; Thomas, O'Bannon, and Bolton 2013).

Personal devices or supplied devices

Intriguingly, despite the apparent ubiquity of mobile devices, there is a tendency in the literature to draw on devices supplied and controlled either by institutions or by research teams (Wright and Parchoma 2011). This is surprising as it leaves a knowledge gap in relation to those particular resources that academics have the greatest access to, namely student devices.

Within the mobile device literature, whilst there is a paucity of peer-reviewed studies that explore BYOD in action (Stavert 2013), those studies that exist tend to draw upon ubiquitous student mobile devices. Because of this, benefits and drawbacks of using personal devices can be more readily discerned. For example, it has been claimed that BYOD can reduce costs for institutions (Dykes and Knight 2012; Stavert 2013), and BYOD is a better fit with current student expectations and lifestyles (Johnson *et al*. 2016). It has also been suggested that personal ownership and choice of mobile devices further improve student engagement and commitment (Crown Fibre Holdings Ltd 2012; Naismith *et al*. 2004).

In contrast, equity of access (Pegrum, Oakley, and Faulkner 2013; Stavert 2013), increased personal distractions (Bayless, Clipson, and Wilson 2013; Naismith *et al*. 2004; Stavert 2013) and the risk of theft (Stavert 2013) have been identified as problems with BYOD. Whilst Dahlstrom and DiFilipo (2013) argued that technical support and guidance on using BYOD for learning within institutions is lacking. A range of devices in the classroom (Crown Fibre Holdings Ltd 2012; Parsons 2013), difficulty distributing and storing student work (Parsons 2013) and a perceived loss of control have also been judged problematic (Cristol and Gimbert 2013).

The large number of concerns identifiable across BYOD studies might indicate why there is an inclination for supplied and controlled devices within the mobile learning literature. Yet, with ubiquity frequently identified as a key boon of mobile devices, more educational research needs to be undertaken that draws upon personal devices.

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Technology acceptance theories

Another notable imbalance within the mobile device literature is the dominance of studies exploring student perspectives as opposed to academic perspectives (Alrasheedi and Capretz 2015a; Hwang and Tsai 2011). This is surprising considering the autonomy of academics in relation to their classroom activities (Guest and Clinton 2007; Jacobsen 1998). Clearly, a greater understanding of how academic decisions are made with regard to accepting mobile devices in their classroom practice could be valuable. Fortunately, a substantial body of literature exists that explores the process of technology acceptance.

Acceptance theories attempt to explain either the expressed intention to use or the actual use itself of a system, idea or technology either at an individual or organisational level (Venkatesh *et al*. 2003). There are a range of models and theories, which in turn report a range of aspects or determinants believed to effect individual acceptance; these are as diverse as individual attitudes, personal experience, social norms and contextual influences (Rogers 2003; Venkatesh *et al*. 2003). Acceptance is a mature empirical area of study dominated by quantitative approaches (Williams *et al*. 2009). A commonly suggested rationale for these models is that they are useful for 'managers needing to assess the likelihood of success for new technology introductions and help them understand the drivers of acceptance in order to proactively design interventions' (Venkatesh *et al*. 2003, p. 426). Such pragmatism certainly has value, but with claims that such models can explain between 17 and 70% of the variance in individual acceptance, across a wide range of innovations and diverse contexts, some caution is required (Venkatesh *et al*. 2003). Indeed, such generalisations have been contested within the acceptance literature itself (Thomas, Singh, and Kemuel 2013), and the numerous models and determinants are perhaps indicative of the difficulties generalising the complexities, vagaries and occasionally irrational perspectives of individuals across a range of diverse contexts. With this in mind and the dominance of quantitative approaches, it is perhaps unsurprising that within the acceptance field there have been calls for more qualitative studies to be undertaken (Hazen *et al*. 2012; Williams *et al*. 2009).

Essentially, acceptance models present well-considered philosophies of change which might provide useful constructs to help interrogate the complexity of local academic acceptance (or not) of personal mobile devices. This study draws upon two specific theories, IDT and UTAUT. The Technology Acceptance Model (TAM) (Davis 1986) was also considered but because of the parsimonious nature of the model, offering two key determinants, which heavily overlap with determinants proferred by both IDT and UTUAT, it was left out. What follows is a brief summary of these two models.

IDT is a mature theoretical framework developed since the 1960s and grounded in the reference discipline of sociology (Hazen *et al*. 2012). It is both an exploratory theory designed to help researchers investigate the process of acceptance over time, as well as an instructional theory promising practitioners who employ it, insights into how to speed up or slow down the rate of innovation diffusion. Rogers, one of the most influential researchers in the field (Sahin and Thompson 2006), argues that there are four main elements in the diffusion of new ideas: the perceived attributes of the innovation, the bounded social system, communication channels and time (Rogers 2003). In relation to perceived attributes, Rogers identifies five key categories: relative advantage, compatibility, complexity (now ease of use), trialability and observability

(Rogers 2003). Over time, these attributes have been expanded by other acceptance researchers to include: result demonstrability, image, voluntariness (Tabata and Johnsrud 2008), computer attitude and self-efficacy (Lee, Kozar, and Larsen 2003). A useful theoretical breakdown of the original IDT categories in relation to mobile learning can be found in Mac Callum (2010).

In contrast, and because of the wide variety of models in the acceptance literature, Venkatesh *et al*. (2003) set out to develop a contemporary unified theory that would capture the essential elements from all of them. After testing eight theoretical models, including IDT and TAM, Venkatesh *et al*. (2003) recognised four key determinants moderated by age, gender, experience (with the technology) and setting (mandatory or voluntary), that they believed would be most significant for predicting behavioural intention. These determinants or categories were performance expectancy, effort expectancy, social influence and facilitating conditions. After empirically testing their model in three different organisations, Venkatesh *et al.* (2003) claimed that across contexts UTAUT could explain 70% of the variance in user intention to use a technology. This sounds impressive, especially when compared to the 17–53% of variance in user intention which they suggest other acceptance models are able to achieve (Venkatesh *et al.* 2003). Yet interestingly and despite the acclaimed accuracy and efficacy of the UTAUT model, its application in complex educational contexts is rare (Infenthaler and Schweinbenz 2013).

Unlike IDT with its micro and macro considerations, UTAUT focuses on the influencing effect of determinants on an individual user at one given time. Considering the complex and highly autonomous practice of HE tutors within the faculty, a model focused on personal psychological factors does seem a better fit. However, whilst UTAUT sounds more comprehensive in its construction and, its researchers claim, more effective in its predictive capacity, one wonders if its determinants will prove as relevant when used to frame a more open-ended qualitative approach in a complex UK HE environment. In contrast, the maturity of IDT is perhaps reflected in its size and complexity, yet its openness to other attributes means that, as a body of research, it surpasses UTAUT in the range of categories and questions that could be derived from it. This study attempts to complement both acceptance models by identifying initially which categories appear most relevant in this particular context and then drawing on those categories to shape the semi-structured interview questions used to explore factors affecting academic acceptance of BYOD.

Academic acceptance of BYOD

The previous section explored acceptance models generally. Unfortunately, studies drawing on acceptance theories that focused on mobile learning devices are limited (Wang, Wu, and Wang 2009; Williams *et al*. 2009) with those that exist focusing on student acceptance (Çuhadar 2014; Kevin Thomas and O'Bannon 2013; Moran, Hawkes, and El Gayar 2010; Park, Nam, and Cha 2012; Wang, Wu, and Wang 2009).

Most recently, Alrasheedi and Capretz (2015b) confirmed this trend upon completion of a meta-review of factors perceived to affect m-learning success. They followed this up with a quantitative investigation in Saudi Arabia, drawing upon the few identified factors from their meta-analysis to formulate survey questions (Alrasheedi and Capretz 2015a). They found academics to be divided in what they thought were critical factors and had difficulty identifying any of these factors as statistically significant (Alrasheedi and Capretz 2015a). Acceptance research has also

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been undertaken by Mac Callum within the New Zealand tertiary sector, employing both UTAUT (2010) and an extended TAM (Mac Callum, Jeffrey, and Kinshuk 2014) across separate quantitative studies. Finding a range of factors such as time, cost, access, support, self-efficacy, anxiety and observability to be important (Mac Callum, Jeffrey, and Kinshuk 2014), yet along with the work of Alrasheedi and Capretz (2015b) no distinctions between BYOD and supplied devices appear to have been made.

Less recently, a qualitative acceptance investigation was carried out by Infenthaler *et al.* (2013) that asked teachers across three German secondary schools to report their views on newly introduced tablet devices. Drawing on UTAUT, the authors found that diversity was apparent in relation to performance expectancy, facilitating conditions and attitude (Infenthaler *et al.* 2013). The authors were also surprised that few of the interviewees believed using tablets could improve learning.

Pollara (2011) conducted an extensive mixed methods study of both student and tutor acceptance of personal devices in an American university. Drawing upon TAM, he found that academic perceptions did not match those of the students and, in particular, that academics feared their students used mobile devices for socialising purposes when claiming they were performing class-related tasks. A lack of time, experience and training were also identified as factors affecting local academic acceptance.

This study hopes to add to the limited research on academic acceptance of BYOD. Following the advice of Williams *et al.* (2009), it also avoids the popular yet parsimonious TAM and draws upon IDT and UTAUT to examine acceptance within the surprisingly underexplored area of a UK HE faculty context. This study also answers calls for more detailed, qualitative acceptance investigations (Hazen *et al.* 2012; Williams *et al.* 2009), which allows for the identification of new factors and categories that could complement existing acceptance and BYOD research.

Methodology

The aim of this small-scale case study was to draw out a range of factors that affect local faculty use or intention to use BYOD and faculty devices in the classroom. This section outlines the overall approach to the study, whilst this article specifically explores those factors related to BYOD. To support this qualitative study, a two-stage methodology was employed using an open-ended focus group, followed by semi-structured interviews.

Focus group

The first stage of this study aimed to check the contextual relevance of acceptance categories and distinctions between BYOD and faculty devices. A focus group was selected as it offered the potential for rich group discussion, which in turn can lead to the drawing out of both 'depth of opinion' (O'Leary 2010) and insightful synthesis (Krueger and Casey 2009). Critically, focus groups are also adept at examining how ideas develop and operate within a cultural context (Robinson 1999).

The author's position, as learning technologist, within the faculty meant that a cross-section of participants could be selected based on known use of mobile devices. Thus, a form of purposive heterogeneous sampling called maximum variation sampling (Patton 1990) was possible. Insider knowledge alongside a snowball approach allowed appropriate participants to be identified and contacted, face-to-face, to confirm

current usage and also explore interest in taking part in the study. Six academics representing six separate programmes from across the faculty and with a range of BYOD and faculty device experiences were invited to attend. Table 1 outlines the focus group sample.

The design of the focus group was carefully considered. Unlike the interviews that followed, no prompts with regard to distinctions between faculty and personal devices were offered nor potential factors suggested. Instead, it was expected that these might surface naturally, if significant, during discussions. Participants were asked individually to write barriers to their acceptance of mobile devices on separate pieces of paper. This individual task was selected to encourage a wide range of factors to be identified and also to tackle noted weaknesses with case study methods, specifically encouraging participants who lack confidence to share potentially contrary factors (Basit 2010) whilst also discouraging the influence of dominant participants (O'Leary 2010; Sheppard, Story, and Jones 2013). Then, as a group, participants discussed each barrier and agreed on its position on a continuum, in relation to how significant each was likely to be for staff across the faculty (see Figure 1). This created opportunities for synthesis and a chance to add more factors participants believed could affect others in the faculty. It also provided a simple measure for showing the perceived strength of these factors in order to compare them to categories identified as important in the acceptance literature.

Mimicking the first part of the focus group, participants were next asked to consider positive factors affecting their acceptance of mobile devices and to write them down individually. Then, once again as a group, they arranged these factors on a new continuum, adding any extra factors that their group discussion generated (see Figure 2).

Upon completion of the focus group, audio and video recordings were reviewed. From this, distinct discussions about BYOD and faculty devices could be identified. Acceptance factors on the completed continuums also linked overtly to BYOD or supplied devices at times. Factors were also labelled whenever they overlapped with a category in the IDT and UTAUT literature. From this, the performance expectancy category appeared to be important due to the number of factors (20) that would fit within it and also the position of these factors primarily at the top of both continuums. This seemed to support Venkatesh *et al.*'s (2003) and Rogers' (Rogers 2003) claims that performance expectancy/relative advantage tends to be the strongest predictors of acceptance. Facilitating conditions (13) and compatibility/attitude (8) were the second and third most relevant when applying the same criteria. Indeed overall, all of the factors identified by the local academics were found to fit within the extended IDT and UTAUT categories. With these results in mind, it was decided to accept IDT and UTAUT as relevant theoretical constructs for this study,

Table 1. Focus group sample.

Programme	Age range (years)	Gender	Mobile device class experience
Food, Nutrition and Health	40–49	F	Student devices
Education Studies	40–49	F	Faculty devices
Tourism	30–39	F	None
Events Management	30–39	M	Faculty devices
Sport Development	20–29	F	Both
Early Childhood Studies	(Prefer not to say)	F	Both

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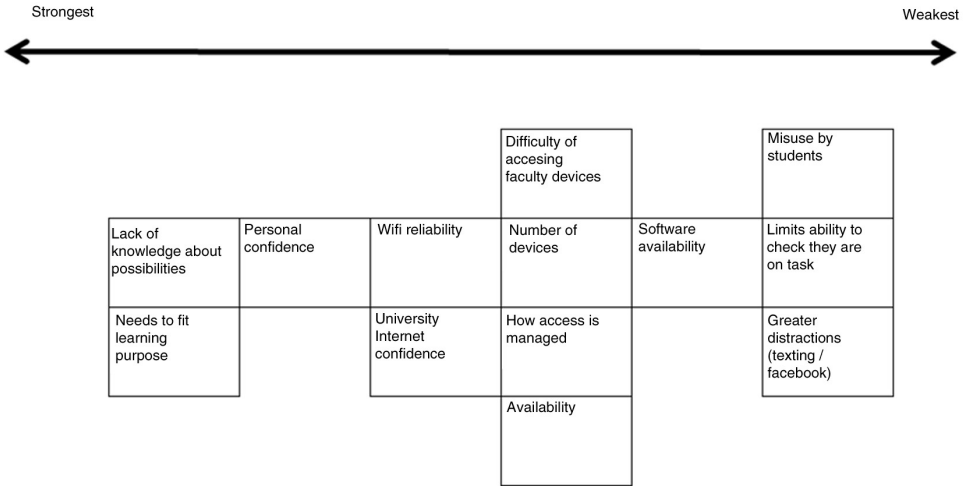

Figure 1. Barriers identified by the focus group.

in this context, and use the categories from the above models to help with the design of the semi-structured interview questions. Prompts would also be used to continue exploring differences in acceptance of BYOD and faculty devices.

Interviews

For the second stage of this investigation, interviews were employed. This method allows researchers to engage with participants individually, providing an opportunity to immediately query key points (Burton, Brundrett, and Jones 2008) and give prompts to gather richer data (Basit 2010). Kvale and Brinkmann (2009) argue that qualitative interviews can help unfold the meaning of participant experiences and can help the interviewer understand the world from their perspective. This notion of interviews fitted well with an investigation attempting to draw out complex perceptions affecting academic acceptance of BYOD and faculty devices (Bere and Rambe 2013; Moran, Hawkes, and El Gayar 2010).

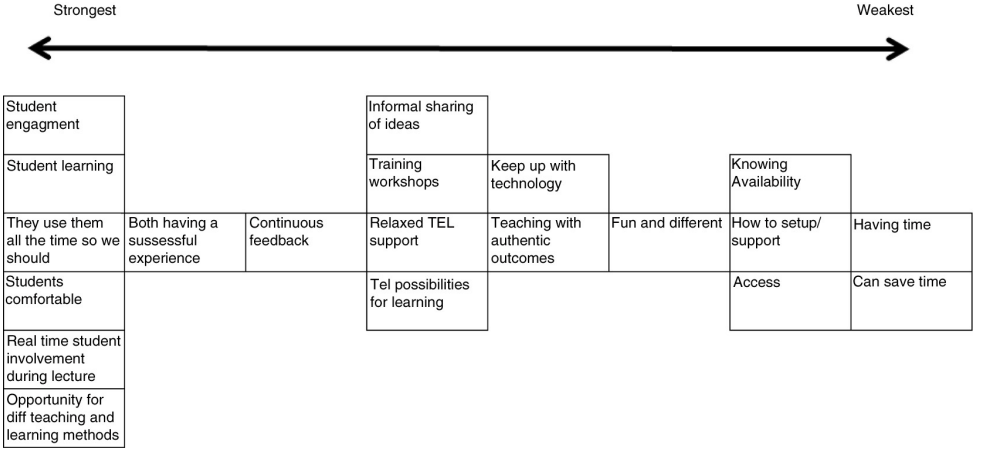

Figure 2. Positive factors identified by the focus group.

Maximum variation sampling was again employed for the interviews as it was for the focus group; however, this time the emphasis was on mobile device use.

Table 2 shows an example of an interview sample.

Sampling followed a similar process to the focus group with insider knowledge and a snowball approach employed to identify a new cross-section of faculty that had used a range of devices. Potential interviewees once identified were contacted face-to-face and their previous mobile device use checked.

Following the findings of the focus group, the interview questions were drawn from categories within IDT and UTAUT alongside a number of biographical questions with prompts used throughout to explore BYOD and faculty device distinctions. The interviews were conducted with eight academics between March 2014 and May 2014. Most of the interviews were over 1 hour in length with the shortest being the pilot interview at 45 minutes and the longest interview lasting 1 hour and 35 minutes.

Themes from the interviews were coded inductively. Notes were taken during the interviews with some general thoughts written down immediately afterwards. Transcripts were then created by the author in Nvivo 10 software with non-relevant indicators such as 'oohs' and 'ahhs', repetition and re-statement not included. A process of member checking transcripts was not engaged with due to the amount of data and time constraints; however, audio recordings were listened to multiple times to check accuracy. These transcripts were then repeatedly reviewed, labelling passages each time until themes emerged. These themes were then compared to focus group factors and factors found in the acceptance and mobile device literature.

As an insider investigation, distinct ethical concerns needed to be considered. Fortunately, the focus of the investigation meant that there were no identifiable conflicts of interest with any university policies and procedures or in particular with regard to sensitive or confidential information. Despite this, anonymity, confidentiality and privacy were made a priority throughout the study (Basit 2010), and it was made clear to participants that they could withdraw their data at any time (BERA 2011; Krueger and Casey 2009). Additionally, before any data collection methods were employed, participants were informed verbally and given a participant information sheet outlining the study and potential consequences (BERA 2011; Cohen, Manion, and Morrison 2011). As should be expected, all data collection and analysis procedures were conducted in accordance with university and British Educational Research Association (BERA 2011) guidelines.

Table 2. Interview sample.

Mobile device type	Programme	Gender	Age range (years)
Student devices	Primary Science	M	40–49
Faculty devices	Education Studies	F	50–59
Both	Events Management	F	40–49
Both	Tourism	F	30–39
Both	Primary/Early Years English	F	40–49
None	Sport Development	F	40–49
None	Coaching	M	40–49
None	Early Childhood Studies	F	50–59

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Findings and discussion

This small-scale explorative study identified a range of distinct factors affecting local academic acceptance of BYOD. Whilst these findings are not generalisable to a larger population, some replication in similar contexts could be expected to occur, and the rich and informative data gathered offer valuable insights into an underexplored area.

Despite perceptions that BYOD and faculty iPads can complete similar tasks, distinctions were drawn by the interviewees when discussing their future classroom practice, with faculty iPads preferred to BYOD (Table 3 and Figure 3).

Interviewees with no experience suggested that they were more likely to employ faculty iPads, whilst a user of both faculty iPads and BYOD also reported that she would rather use faculty iPads. The remaining interviewees reported that they were likely to continue with their current practice.

Table 4 summarises the BYOD factors identified during the focus group discussions and interviews. As can be seen, more barriers than enablers were found, which might help clarify these reactions.

The following discussion is split into three overarching categories: responsibility, attitude and device heterogeneity. Although it is difficult to classify acceptance factors due to the complex multifaceted relationships between them (Bingimlas 2009), these overarching categories incorporate the most popular factors reported by the participants.

Responsibility

The focus group and some of the interviewees suggested that BYOD was conveniently accessible and scalable. Echoing reports in the literature some interviewees also argued that students would find it easier to operate personal devices rather than supplied devices (Rossing *et al.* 2012; Williams 2012). Interestingly, the BYOD-only user went further and stated that an important factor for him was that BYOD enabled a shift in technical accountability from academics to students which has been touched upon elsewhere (Stavert 2013, p. 25).

On the contrary, some of the interviewees expressed concern around the lack of local technical support for BYOD, particularly compared to the supplied faculty iPads:

> I can't see [that] I could ring up ... and go, 'the students can't use their mobile phones can you come over and help me'. I am booking the pads, I think they [ICT support] are part of that package

Most of the interviewees, including all users of BYOD, outlined concerns about student reliability. These included: whether students would remember to charge their devices, install the correct apps, have enough space or even bring their device in when

Table 3. Prior experience compared to preference.

Prior classroom experience	Prefer faculty iPads	Prefer BYOD	Comfortable with either
Faculty iPads only	1		
BYOD only		1	
Both faculty iPads and BYOD	1		2
No experience	3		

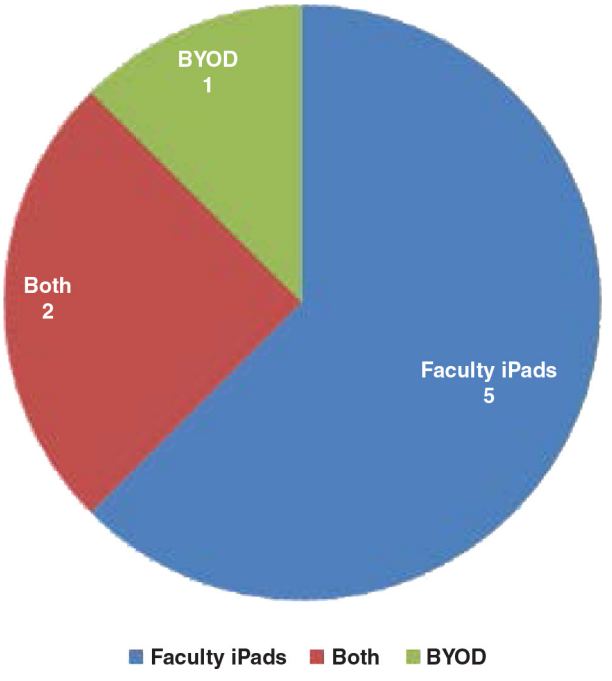

Figure 3. Mobile device preferences.

required. This feared unreliability was in direct contrast to the faculty iPad service, bolstered by the perceived reliability of the technical team.

Additionally, and linked to both support and reliability, one surprising finding was a noticeable tendency to identify and use BYOD for short, replaceable or contingent tasks. Perhaps, linking to the perceived convenience of BYOD and negative attitudes around mobile phones, both of which are touched upon in the quote below:

Table 4. Factors affecting BYOD acceptance.

Enablers	Barriers
Students accountable for technical issues and processes on their own devices	Academic device experience unlikely to be relevant for whole class
Scalable	Unequal access
Existing student knowledge	Limited faculty technical support
No need to book	Phone and class management tensions
Personal ownership may reduce silliness	Phone distractions
Academic not responsible for hardware	Phone attitude generally
Available any time	Variable functions
	Students responsible for management
	Limited technical and task control
	Unknown quantity
	Increased personal distractions
	Possible student network costs
	Flexible/multiple instructions required
	No organisational support/pressure
	Academic issues with personal devices

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> I don't think I will ever use mobile phones, I would be more prone to, rather than doing ad hoc or use things like twitter feeds or questionnaires. I would rather say here's a set of iPads with something on, this is something you need to know about let's go and explore this. I would be more prone to do that, It would be quite structured not just let's explore something It would have to be more directed rather than open house.

Attitude

As suggested in the previous quote, attitudes expressed towards mobile phones were often negative. Although there were no direct phone questions, the focus group and most of the interviewees identified a range of concerns including the impact of phones on work life balance, people rudely using phones during conversation and inappropriate use of phones in class. These reservations are not unique and have been reported by academics previously (Baker, Lusk, and Neuhauser 2012; Bayless, Clipson, and Wilson 2013; Henderson and Chapman 2012; Lauricella and Kay 2013).

Furthermore, all the interviewees and the focus group openly struggled with the tension employing phones in class generates, with respective comments, 'I would never use a phone, because a phone to me is something I will tell the students not to use, so it's a conflict of interest' and 'you know when they have the phone out and are not doing work. But I feel like a dragon telling them to put them away. But then how can I ask them to get their phones out, it seems hypocritical!'

Within the faculty, no consistent patterns could be discerned with regard to teaching preferences or practices and perceptions of phones or BYOD as being disruptive. Links also could not be determined with regard to general mobile device use and a preference for student-centred practices either (Kukulska-Hulme 2013). This could be due to the small sample size and reliance on non-anonymous self-reported accounts. Instead, perceptions on disruption appeared to link overtly to device type. Indeed, despite the literature indicating that iPads can be equally disruptive (Henderson, Gibson, and Gibb 2013; Infenthaler and Schweinbenz 2013; Kinash, Brand, and Mathew 2012; Rossing *et al*. 2012) only one interviewee reported such concerns about faculty iPads compared to an overwhelming majority expressing clear concerns about phones.

This repeated negativity towards phones compared to other mobile devices compliments the findings of Sad and Göktaş (2013), who found an equally negative attitude when comparing phones to laptops. Although BYOD is not reliant on phones, local perceptions that phones are a fundamental component of BYOD could be problematic. Indeed, when asked about future BYOD practice, all non-users gave negative phone-related statements:

> I just, I don't know [about] using phones, I don't know, there is just something, this is me the dinosaur, but I just think again they are permanently switched on, it's like an appendage.

Perhaps significantly previous education-based acceptance studies have identified attitude as an important determinant of acceptance (Moran, Hawkes, and El Gayar 2010; Park, Nam, and Cha 2012; Thomas, Singh, and Kemuel 2013).

Device heterogeneity

In the acceptance and diffusion literature, experience is identified as a key moderating variable that can affect many other psychological elements including

self-efficacy and acceptance directly (Rogers 2003; Venkatesh *et al*. 2003). This investigation does not contradict those studies, with a number of academics identifying the importance of congruence between faculty sets and the brand or operating system (OS) of their own personal devices. One explanation for this is suggested by Bingimlas (2009) who states that 'it is important to remember that not only is access to resources used in the classroom for students' learning important, but also access at home will help with self-training'. The distinctions made by academics, with regard to brand and OS appear important here, as no similar boons were reported with regard to personal use and BYOD acceptance. This is perhaps unsurprising, as academics are unlikely to own enough devices to match the variety of brands and OSs that students could conceivably bring to their classroom.

Unfortunately, the diversity of student devices and academic self-efficacy also seems to link closely to concerns about both failure in the classroom (Balanskat, Blamire, and Kefala 2006; Beggs 2000) and student satisfaction. For example, doubts were repeatedly expressed about BYOD's ability to offer equity of access, a concern found in much of the literature (Pegrum, Oakley, and Faulkner 2013; Stavert 2013). Furthermore, fears about negative academic and student experiences caused by variances in device functionality and performance echoed reports made by Rossing *et al.* (2012) and Lamaster and Stager (2012), respectively. In contrast, academics identified faculty devices as 'less of an unknown quantity', 'less complex' and 'more controllable'.

Conclusion

This small-scale exploratory study compliments acceptance research by employing a qualitative design that both reviews and then draws upon acceptance constructs. Furthermore, it extends research into mobile learning by sharing a range of factors reported by academics to inhibit or encourage acceptance of BYOD in a UK HE faculty. The majority of factors identified can be grouped into three overarching categories: attitude, responsibility and device heterogeneity. With regard to the factors, this investigation found that despite some key enablers such as convenience, access and student accountability, local academics perceived more barriers than enablers with regard to using BYOD in the classroom. These barriers to acceptance include mobile phone attitude, scope of prior personal use, control, fears around equity of access, limited institutional support and student device management.

Many of the negative factors above touch upon a lack of knowledge or a fear of the unknown which may explain other findings within the small exploratory sample. Firstly, an overall preference for faculty iPads as opposed to BYOD, particularly for academics with no prior experience of using mobile devices in the classroom. Secondly, a noticeable preference by existing mobile device users for the approach that they already have experience with. Thirdly, the tendency for BYOD to be employed as an informal contingent tool, with caution surrounding the use of BYOD for more substantial or critical activities.

Recommendations and limitations

To help identify the psychological factors affecting tutor acceptance, this research employed a detailed qualitative methodology. Yet, it is accepted that this study provides

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only an analysis of self-perceptions presented via non-anonymous descriptive accounts. Thus, academics might not have been aware of their own emergent beliefs (Levin and Wadmany 2006) or they might not have been willing to share certain beliefs in such a context (Cohen, Manion, and Morrison 2011; Kvale and Brinkmann 2009). A longitudinal investigation that analyses behaviour alongside perceptions could provide further insight.

Due to the limited research exploring academic acceptance of BYOD, some larger scale quantitative and qualitative studies would be invaluable, with the former perhaps drawing on the factors and categories identified in this study and the latter identifying parallels and new factors that can affect BYOD acceptance within other UK HE institutions.

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